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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/069,369	02/25/2002	Josef Guth	50603	8131

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EXAMINER	
WILKINS III, HARRY D	

ART UNIT	PAPER NUMBER
1742	

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/069,369	GUTH ET AL.	
	Examiner	Art Unit	
	Harry D Wilkins, III	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-23 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-4,10-16 and 20-23 is/are rejected.

7)☒ Claim(s) 5-9 and 17-19 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2252002 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3, 10, 13, 15 and 20 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Thompson et al (US 6,368,486).

Thompson et al anticipate the invention as claimed. Thompson et al teach (see abstract, col. 5, lines 38-46 and col. 6, lines 26-34) an electrolytic cell including an aqueous solution at the anode compartment, a cathode, and an ion-exchange membrane (i.e.-solid electrolyte) between the anode and cathode areas of the cell. Thompson et al teach (see col. 7, lines 19-32) that the production of the ion-exchange membrane includes coating one side of the membrane with a Nafion® layer.

Regarding claim 3, Nafion® is a polymer electrolyte [inherent, see specification at page 7, lines 21-25]. Thompson et al teach (see col. 7, lines 58-59) that the Nafion® coated side was placed facing "out of the holder", i.e.-on the anode compartment side.

Regarding claim 10, Thompson et al teach (see col. 6, lines 26-34) that the cathode can be made from the same alkali metal as is contained in the aqueous anolyte.

Regarding claims 13, 15 and 20, Thompson et al teaches, as above, a process for preparing an alkali metal from an aqueous solution of an alkali metal salt, using the electrolysis cell as claimed.

3. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al (US 6,368,486).

Thompson et al are silent as to the source of the akali metal salt solutions.

However, it would have been within the expected skill of a routineer in the art to have adapted the process to use the akali metal salt solution from any known source,

such as a waste product from another process. One of ordinary skill in the art would have been motivated to do so because using the waste stream from another process would reduce overall waste, thus reducing losses and environmental concerns.

7. Claims 2, 4, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al (US 6,368,486) in view of Balagopal et al (US 5,580,430).

The teachings of Thompson et al are described above in paragraph no. 2. Thompson et al teach (see col. 3, lines 5-10) using any of Li, Na and K as the alkali metal.

Thompson et al do not teach that the solid electrolyte is made from one of the claimed compounds.

Balagopal et al teach (see col. 3, lines 13-23) that Nasicon materials used as solid electrolytes have increased sodium ion conductivity and sodium ion selectivity compared to other ion-conductive membranes.

Therefore, it would have been obvious to one of ordinary skill in the art to have substituted a Nasicon material as the solid electrolyte in the electrolytic cell of Thompson et al because Balagopal et al teach that the Nasicon materials provide increased sodium ion conductivity and sodium ion selectivity compared to other ion-conductive membranes.

Regarding claims 4, Nafion® (as taught by Thompson et al) is a polymer electrolyte [inherent, see specification at page 7, lines 21-25]. Thompson et al teach (see col. 7, lines 58-59) that the Nafion® coated side was placed facing "out of the

holder", i.e.-on the anode compartment side.

Regarding claims 14 and 16, Thompson et al teaches, as above, a process for preparing an alkali metal from an aqueous solution of an alkali metal salt, using the electrolysis cell as claimed when taken in view of Balagopal et al.

8. Claims 11, 12 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Thompson et al (US 6,368,486) in view of Minck (US 4,108,743).

The teachings of Thompson et al are described above in paragraph no. 2. Thompson et al also teach (see col. 7, line 6 through col. 8, line 15) that a "holder" was used as the cathode, and that a SS304 (stainless steel) disc was used in the holder. The steel disc acted as the cathode.

Thompson et al do not teach that the cathode is separated form the solid electrolyte by a liquid electrolyte.

However, Minck teaches (see abstract and col. 1, lines 59-65) placing a liquid electrolyte in between a cathode and the solid electrolyte for the reason that the liquid electrolyte prevents damage to the solid electrolyte.

Therefore, it would have been obvious to one of ordinary skill in the art to have added a liquid electrolyte between the cathode and solid electrolyte in the apparatus of Thompson et al because Minck teaches that the liquid electrolyte prevents damage of the solid electrolyte.

Regarding claim 12, Minck teaches (see col. 4, lines 38-48) that the liquid electrolyte is typically made from a salt of the same metal that is being recovered, such

as Na. It would have been within the expected skill to select one of the salts that meets the criteria of Minck for this purpose, such as NaOH or $NaNH_2$, as claimed.

Regarding claim 21, Thompson et al teaches, as above, a process for preparing an alkali metal from an aqueous solution of an alkali metal salt, using the electrolysis cell as claimed when taken in view of Minck.

Allowable Subject Matter

9. Claims 5-9 and 17-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter: regarding claims 5-9 and 17-19, Thompson et al do not teach that the ion-conductive layer is an alkali metal salt or a compound which intercalates the alkali metal ions. There is no motivation in the prior art to change the composition of the ion-conductive layer of Thompson et al.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 703-305-9927. The examiner can normally be reached on M-Th 10:00am-8:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 703-308-1146. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Harry D Wilkins, III
Examiner
Art Unit 1742

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ROY KING
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700